

a connection portion for connecting the signal transmission line to a waveguide, said connection portion being disposed on the grounded layer;

wherein said grounded layer has a slot at a position opposed to an end of said signal transmission line; and

wherein said connection portion includes a first dielectric layer disposed so as to cover substantially the whole surface of the grounded layer disposed on the other surface of said dielectric substrate, a second dielectric layer is laminated on the first dielectric layer, and a patch conductor provided in an interface between said first dielectric layer and said second dielectric layer, a portion of said first dielectric layer positioned on said slot provides the first dielectric portion, and a portion of said second dielectric layer positioned over said slot provides the second dielectric portion.

3. A wiring board according to claim 1, wherein vertical conductors are provided penetrating through the first dielectric layer and the second dielectric layer so as to surround said patch conductor with said patch conductor at a center of said vertical conductors, said first dielectric portion and said second dielectric portion are disposed in a region surrounded by said vertical conductors, and the conductor wall of the waveguide to be connected to the connection portion is electrically connected to said grounded layer via said vertical conductors.

4. A wiring board according to claim 1, wherein a maximum length SL of said slot in a direction at right angles with the signal transmission line is from 1 to 2 times as great as the wave length of signals propagating through the dielectric substrate.

5. A wiring board according to claim 4, wherein said patch conductor has a rectangular shape and, when a maximum length W1 of said patch conductor in a direction at right angles with said signal transmission line, and a maximum length L1 thereof in a direction in parallel with said signal transmission line, there holds a relationship $L1 > W1$.

15. A wiring board according to claim 3, wherein the first dielectric portion and the second dielectric portion surrounded by said vertical conductors have an outer shape which is the same as, or smaller than, the shape of an opening in cross section of the waveguide that is to be connected.

22 16. A wiring board according to claim 1, wherein a connection member is provided on said second dielectric layer to secure the electrically conducting walls of the waveguide, said connection member has, formed therein, an opening of a size substantially the same as the shape of an opening portion in cross section of the waveguide that is to be connected, and the inner surfaces of the opening of said connection member are formed of an electric conductor.

17. A wiring board according claim 15, wherein a connection member is provided on said second dielectric layer to secure the electrically conducting walls of the waveguide, said connection member has, formed therein, an opening of a size larger than the respective outer shapes of said first and second dielectric portions but is substantially the same as the shape of the opening portion in cross section of the waveguide that is to be connected, and the inner surfaces of the opening of said connection member are formed of an electric conductor.